General

Guideline Title

British Thoracic Society guideline for advanced diagnostic and therapeutic flexible bronchoscopy in adults.

Bibliographic Source(s)

Du Rand IA, Barber PV, Goldring J, Lewis RA, Mandal S, Munavvar M, Rintoul RC, Shah PL, Singh S, Slade MG, Woolley A, British Thoracic Society Interventional Bronchoscopy Guideline Group. British Thoracic Society guideline for advanced diagnostic and therapeutic flexible bronchoscopy in adults. Thorax. 2011 Nov;66(Suppl 3):iii1-21. [131 references] PubMed

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The grade of the recommendation (A-D; Good Practice Points [GPP]) and the level of evidence (1++, 1+, 1-, 2++, 2+, 2-, 3, 4) are defined at the end of the "Major Recommendations" field.

Diagnosis of Mediastinal/Hilar Lymph Nodes and Peribronchial Masses

Conventional Transbronchial Fine Needle Aspiration (TBNA)

- Conventional TBNA is a safe technique and should be used to sample mediastinal and hilar lymphadenopathy during initial diagnostic bronchoscopy where a pre-procedure computed tomography (CT) scan has demonstrated significant adenopathy. [B]
- Conventional TBNA is a safe technique for sampling hilar and mediastinal lymph nodes in cases of suspected sarcoidosis and may be used in conjunction with endobronchial and transbronchial biopsies. [B]
- Depending upon the clinical setting, a non-diagnostic conventional TBNA result may warrant further investigation. Real-time endobronchial ultrasound-guided TBNA (EBUS-TBNA) or surgical lymph node sampling should be considered. [GPP]

EBUS-TBNA

- EBUS-TBNA is a safe and effective technique for the assessment of hilar and mediastinal lymph nodes in cases of confirmed or suspected lung cancer. [B]
- EBUS-TBNA is a safe and effective technique for sampling hilar and mediastinal lymph nodes in cases of suspected sarcoidosis and may be used in conjunction with endobronchial and transbronchial biopsies. [B]
- EBUS-TBNA is a safe and effective technique for sampling paratracheal and peribronchial intraparenchymal lung masses. [D]

- At present there is insufficient evidence to recommend EBUS-TBNA for routine use in the diagnosis of lymphoma. [D]
- In cases where EBUS-TBNA results are negative for malignancy, a confirmatory surgical biopsy should be performed where appropriate. [GPP]

Therapeutic Procedures for Malignant Disease

Malignant Airway Obstruction

1. Endobronchial debulking of tumours
    - In patients with central airway obstruction (CAO) due to intraluminal tumour, endobronchial tumour debulking should be considered. [D]
    - When undertaking endobronchial debulking of tumours, a laryngeal mask or uncuffed endotracheal tube is recommended to achieve airway control. [GPP]
2. Endobronchial electrocautery or diathermy
    - Endobronchial electrocautery may be considered for use with curative intent in benign disease of the airway including incising web-like stenosis, benign tumours and granulation tissue. It may also be considered for primary treatment of early stage non-invasive lung cancer. [D]
    - Endobronchial electrocautery may be considered for palliation of malignant CAO, with or without critical airway narrowing. [D]
    - When undertaking snare resection, intermittent bursts of electrocautery of not more than 2 s duration should be used while carefully closing the snare until resistance is felt. [GPP]
    - Avoid a fractional inspired oxygen (FiO_2) of >0.4 when undertaking electrocautery to reduce the risk of airway fire. [GPP]
3. Argon plasma coagulation (APC)
    - APC may be considered for the debulking of obstructing endobronchial tumour. [D]
    - APC may be considered for tumour debulking in patients without acute critical airway narrowing. [D]
    - APC may be considered for the treatment of haemoptysis in patients with endobronchial abnormalities. [D]
4. Thermal laser
    - In patients with CAO due to intraluminal tumour, relief of obstruction using neodymium-doped yttrium aluminum garnet (Nd-YAG) laser may be considered. [D]
    - The power setting should be limited to 40 W [GPP]
5. Cryotherapy and cryoextraction
    - Cryobiopsy may be considered for diagnostic endobronchial tissue sampling to provide large-volume specimens without crush artefact. [B]
    - Cryotherapy may be considered for tumour debulking in patients without critical airway narrowing. [D]
    - Cryorecanalisation/cryoextraction may be considered for tumour debulking. [D]
6. Photodynamic therapy (PDT)
    - PDT may be considered for tumour debulking in patients without critical airway narrowing. [D]
    - The technique should be available for carefully selected patients on a regional basis. [GPP]
7. Brachytherapy
    - Brachytherapy should not be used first-line in preference to external beam radiotherapy for the palliation of lung cancer. [C]
    - Brachytherapy should be considered for the palliation of haemoptysis or CAO in locally advanced central lung cancer. [D]

Airway Support with Stents

- The use of self-expanding metallic stents may be considered for the treatment of malignant CAO due to extrinsic disease. [D]
- Self-expanding metallic stents may be used to maintain airway patency following endobronchial debulking techniques. [D]
- Self-expanding metallic stents can be used to restore or maintain airway patency in conjunction with other treatments such as external beam radiotherapy. [D]
- Patients require careful specialist follow-up after stent insertion. [GPP]
- Stents should be used with caution in non-malignant disease, considering their long-term complications. Self-expanding metallic stents may be difficult to remove following long-term placement. [GPP]
- Self-expanding metallic stents should only be used in benign disease after all other therapeutic options have been exhausted. [GPP]
- A risk-benefit assessment should be performed, incorporating immediate and long-term implications, prior to selecting any particular type of stent. [GPP]

Treatment with Curative Intent for Early Lung Cancer

- Fractionated brachytherapy should also be considered for the curative treatment of early central lung cancer, especially if performance or cardiorespiratory status precludes surgery or radical external beam radiotherapy. The success of brachytherapy for radical treatments requires accurate local staging to exclude extrabronchial tumour extension. [C]
- PDT can be considered for the curative treatment of early central lung cancer, especially for tumours 1 cm or less in diameter and provided there is no imaging evidence of extrabronchial involvement. [D]
- PDT can be considered for the curative treatment of recurrent lung cancer where there is localised endobronchial disease in patients who are not fit for surgery or radical radiotherapy. [D]

Emerging Applications for Flexible Bronchoscopy

Electromagnetic Navigation Bronchoscopy

- Electromagnetic bronchoscopy may be considered for the biopsy of peripheral lesions or to guide TBNA for sampling mediastinal lymph nodes. [D]

Endobronchial Valves in Emphysema

- Endobronchial valves may be considered in the treatment of selected patients with severe emphysema and hyperinflation with heterogeneous disease in the absence of significant collateral ventilation or who have a complete fissure on CT scanning. [B]
- Patients should be enrolled into clinical trials until more robust data of clinical benefit is available. [GPP]

Bronchial Thermoplasty in Asthma

- Bronchial thermoplasty is a possible treatment option in selected patients with severe persistent asthma already on maximal therapy, although its place in the treatment of asthma remains to be established. [A]
- Long-term safety and efficacy remain unclear. Hence, treatment should be limited to a few specialist centres in carefully selected patients. Longer-term follow-up of treated patients is recommended. [GPP]

Definitions:

Grades of Recommendations

Grade	Type of Evidence
A	At least one meta-analysis, systematic review or randomised controlled trial (RCT) rated as 1++ and directly applicable to the target population *or* A systematic review of RCTs or a body of evidence consisting principally of studies rated as 1+ directly applicable to the target population and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2++ directly applicable to the target population and demonstrating overall consistency of results *or* Extrapolated evidence from studies rated as 1++ or 1+
C	A body of evidence including studies rated as 2+ directly applicable to the target population and demonstrating overall consistency of results *or* Extrapolated evidence from studies rated as 2++
D	Evidence level 3 or 4 *or* Extrapolated evidence from studies rated as 2+
GPP	Important practical points for which there is no research evidence nor is there likely to be any research evidence. The Guideline Committee wishes to emphasise these as Good Practice Points.

Revised Grading System for Recommendations in Evidence Based Guidelines

Grade	Evidence
1++	High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias
1+	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias

Grade	Evidence
1-	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2++	High quality systematic reviews of case-control or cohort studies *or* High quality case-control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal
2+	Well conducted case-control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
2-	Case-control or cohort studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal
3	Non-analytic studies, for example, case reports, case series
4	Expert opinion

Clinical Algorithm(s)

An example of a malignant airway obstruction flow diagram (local facilities may determine the approach used) is available in the original guideline document.

Scope

Disease/Condition(s)

- Central airway obstruction due to malignancy
- Emphysema
- Asthma
- Lung cancer

Guideline Category

Assessment of Therapeutic Effectiveness

Diagnosis

Treatment

Clinical Specialty

Internal Medicine

Oncology

Pulmonary Medicine

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Respiratory Care Practitioners

Guideline Objective(s)

- To help all those who undertake flexible bronchoscopy to understand more about this important and rapidly developing area
- To inform those who undertake or intend to undertake the procedures within the guideline, and also to inform others as to what may be available for patients under their care and the indications, likely response and complications of such procedures

Target Population

Adults with central airway obstruction due to malignancy, emphysema, asthma, and lung cancer who may undergo flexible bronchoscopy for diagnosis or treatment

Note: Rigid bronchoscopy and autofluorescence bronchoscopy are not covered in this guideline.

Interventions and Practices Considered

Assessment/Diagnosis

1. Bronchoscopy
2. Conventional transbronchial needle aspiration (TBNA) and real-time endobronchial ultrasound-guided TBNA (EBUS-TBNA)
3. Surgical lymph node sampling

Management/Treatment

1. Therapeutic procedures for malignant disease
    - Endobronchial debulking of tumors
    - Endobronchial electrocautery or diathermy
    - Argon plasma coagulation (APC)
    - Thermal laser
    - Cryotherapy and cryoextraction
    - Photodynamic therapy (PDT)
    - Brachytherapy
2. Self-expanding metallic stents for airway support
3. Treatment with curative intent for early lung cancer
    - Fractionated brachytherapy
    - PDT
4. Emerging applications for flexible bronchoscopy
    - Electromagnetic navigation bronchoscopy
    - Endobronchial valves
    - Bronchial thermoplasty

Major Outcomes Considered

- Sensitivity and specificity of diagnostic tests
- Symptom control
- Open airway rate
- Adverse effects of therapy

Methodology

Methods Used to Collect/Select the Evidence

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Clinical Questions and Literature Search

Clinical questions were gathered in the Patient, Intervention, Control, Outcome and Time (PICOT) format to define the scope of the guideline and inform the literature search.

Systematic electronic database searches were conducted in order to identify potentially relevant studies for inclusion in the guideline. For each topic area the following databases were searched: Ovid MEDLINE (from 1988) (including MEDLINE In Process), Ovid EMBASE (from 1988), Ovid CINAHL (from 1982) and the Cochrane Library (from 1992) (including the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects, the Cochrane Central Register of Controlled Trials, the Health Technology Assessment database and the NHS Economic Evaluation Database).

The searches were first run in January 2008 and updated in September 2010. Searches were saved and run on a monthly basis to identify newly published literature to date. Searches included a combination of indexed terms and free text terms and were limited to English language publications only. The initial search identified 3751 potential papers.

Appraisal of the Literature

Appraisal was performed using the criteria stipulated by the Appraisal of Guidelines for Research and Evaluation (AGREE) collaboration. Each paper was appraised by a pair of reviewers. One individual read the title and abstract of each article retrieved by the literature searches and decided whether the paper was definitely relevant, possibly relevant or not relevant to the project. Criteria formulated for categorising the abstracts into these three groups were:

- Whether the study addressed the clinical question
- Whether the appropriate study type was used to produce the best evidence to answer the clinical question
- Abstract was in English
- Studies where exclusively rigid bronchoscopy was used were not evaluated.
- Abstracts were not rejected on the basis of the journal of publication, country in which the research was performed or published nor the date of publication.

The full paper was obtained for all relevant or possibly relevant abstracts and allocated to the relevant section(s) which were broadly grouped as argon plasma, brachytherapy, cryotherapy, diathermy, endobronchial ultrasound (EBUS), transbronchial needle aspiration (TBNA), endobronchial valves, general interventional bronchoscopy, laser, photodynamic therapy, stents, thermoplasty and virtual bronchoscopy with electromagnetic navigation.

Number of Source Documents

Three hundred and eighty-seven papers were critically appraised.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Revised Grading System for Recommendations in Evidence Based Guidelines

Grade	Evidence
1++	High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

Grade	Evidence
1++	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
1-	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2++	High quality systematic reviews of case-control or cohort studies *or* High quality case-control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal
2+	Well conducted case-control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
2-	Case-control or cohort studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal
3	Non-analytic studies, for example, case reports, case series
4	Expert opinion

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The two leads for each section independently appraised each paper assigned to them using the Scottish Intercollegiate Guidelines Network (SIGN) critical appraisal checklists. A web-based guideline development tool enabled each pair of reviewers to collaborate online. The reliability of the evidence in each individual study was graded using the SIGN critical appraisal check lists and is shown in the evidence tables (++, + or -). The body of evidence for each recommendation was summarised into evidence statements and graded using the SIGN grading system (see the "Rating Scheme for the Strength of the Evidence" field). Disagreements were resolved by discussion with the section partner.

Considered Judgement and Grading of Evidence

The Guideline Group used the online-derived evidence tables to judge the body of evidence and grade recommendations for this guideline. Evidence tables are shown in Appendix 4 of the original guideline document, which is available online (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

This guideline is based on the best available evidence. The methodology used to write the guideline adheres strictly to the criteria as set by the AGREE collaboration in the document, which is available online at http://www.agreetrust.org/ .

Drafting of the Guideline

The Guideline Committee corresponded regularly by email and meetings of the full group were held in December 2007, June 2008, December 2008, March 2009, June 2009 and October 2009.

Considered Judgement and Grading of Evidence

Where evidence was lacking to answer the formulated clinical questions, expert opinions were obtained for formal consensus statements using the Delphi method. The following were considered in grading of the recommendations:

- The available volume of the body evidence
- How applicable the obtained evidence was in making recommendations for the defined target audience of this guideline
- Whether the evidence was generalisible to the target population for the guideline

- Whether there was a clear consistency in the evidence obtained to support recommendations
- What the implications of recommendations will be on clinical practice in terms of resources and skilled expertise
- Cost-effectiveness was not reviewed in detail as in-depth economic analysis of recommendations fall beyond the scope of this guideline.

Recommendations were graded from A to D as indicated by the strength of the evidence as shown in the "Rating Scheme for the Strength of the Recommendations" field). Important practical points lacking any research evidence were highlighted as 'Good Practice Points' (GPP).

Rating Scheme for the Strength of the Recommendations

Grades of Recommendations

Grade	Type of Evidence
A	At least one meta-analysis, systematic review or randomised controlled trial (RCT) rated as 1++ and directly applicable to the target population *or* A systematic review of RCTs or a body of evidence consisting principally of studies rated as 1+ directly applicable to the target population and demonstrating overall consistency of results
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D	Evidence level 3 or 4 *or* Extrapolated evidence from studies rated as 2+
GPP	Important practical points for which there is no research evidence nor is there likely to be any research evidence. The Guideline Committee wishes to emphasise these as Good Practice Points.

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The guideline was discussed at an open session at the British Thoracic Society (BTS) Winter Conference in December 2009. A revised draft guideline document was circulated to all the relevant stakeholders for consultation in May 2010 followed by a period of online consultation. The BTS Standards of Care Committee reviewed the draft guideline in July 2010. Further revision was made in September 2010 following the incorporation of suggestions by international experts in interventional bronchoscopy. The guideline was reviewed by the BTS Standards of Care Committee in November 2010 and submitted for publication.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate use of diagnostic and therapeutic bronchoscopy

Potential Harms

Conventional Transbronchial Needle Aspiration (TBNA)

The complications most commonly reported are pneumomediastinum and pneumothorax, minor and self-limiting bleeding and puncture of adjacent structures.

Endobronchial Electrocautery

- The main complication of diathermy is bleeding. In the largest series this occurred in 1:56 cases. Airway fire has been described. To avoid this complication, a fractional inspired oxygen (FiO_2) of 0.4 or less is recommended, and some groups recommend switching off supplemental oxygen during diathermy use.
- Careful application of the patient plate and the use of insulated bronchoscopes reduce the risk of current leakage causing burns. Use in patients with pacemakers should be avoided if possible but, if use is unavoidable, guidelines for reducing risk are available from the Medicines and Healthcare products Regulatory Agency (MHRA). It is recommended that the skin surface overlying a metallic joint prosthesis be avoided when placing return electrodes for electrocautery.

Argon Plasma Coagulation (APC)

- APC delivered via flexible bronchoscopy for the treatment of central airway obstruction (CAO) or haemoptysis due to endobronchial lesions has a major complication rate of 2%.
- In common with other ablation procedures performed using flexible bronchoscopy, APC should not normally be used for the treatment of lesions causing significant tracheal obstruction unless facilities are immediately available for securing the airway in the event of complications.

Neodymium-Doped Yttrium Aluminum Garnet (Nd-YAG) Laser

Complications include massive haemorrhage (1%), pneumothorax (0.4%) and pneumomediastinum (0.2%). The periprocedural death rate is 2% to 3%. Thermal laser causes more airway scarring and subepithelial fibrosis than other immediate debulking techniques such as diathermy, argon plasma and cryoextraction.

Cryotherapy

Cryotherapy appears to be safe in the treatment of malignant endobronchial obstruction. In case series, the complications observed were haemoptysis (4% to 10%), bronchospasm (4.5%), cardiac arrhythmia (11%) and death (1.3%).

Photodynamic Therapy (PDT)

- Hematoporphyrin derivatives are taken up by skin, causing sensitivity to sunlight or bright direct light for up to 8 weeks. Protection of exposed areas is necessary, but indoor light is safe and some light exposure is required to photobleach the sensitiser from the skin. In one series of nine patients there was one massive haemoptysis and one bronchopleural fistula. Complications may arise from delayed necrosis of treated tissue.
- Compared with electrocautery, more airway scarring and more subepithelial fibrosis were seen after treatment with PDT.
- The use of PDT lasers requires standard laser safety precautions, principally to address the risk of ocular damage.
- PDT is effective in the palliation of advanced tracheobronchial lung cancer, although adverse events including haemoptysis can occur.

Brachytherapy

Some patients develop radiation bronchitis and occasionally stenosis. The principal serious risk is of massive haemoptysis, often occurring as a late complication in good responders, and more likely to occur with a higher local radiation dosage— that is, in patients who have also received external beam radiation either sequentially or concurrently.

Tracheobronchial Stents

The use of self-expanding metallic stents for the treatment of central airway obstruction is associated with a number of complications including stent malposition, migration or fracture, haemorrhage, mucus impaction, overgrowth by granulation tissue or tumour, infection, aerodigestive fistula formation and bronchospasm. Early stent-associated deaths have been reported due to complications such as hypoxia following stent migration, severe sepsis and bronchospasm. Complications may necessitate stent removal, which can be complex and hazardous where there has been a stent fracture. In benign airway conditions where life expectancy is greater, metallic stents are not recommended because of the longer-term risk of stent fracture.

Electromagnetic Navigation Bronchoscopy (ENB)

ENB appears to be safe, with pneumothorax as the most commonly reported complication.

Valves in the Treatment of Emphysema

Treatment with valves has been complicated by exacerbations and some pneumothoraces but is generally safe. In a randomised study there were eight deaths (2.7%) and the incidence of other key adverse events was distal pneumonia (0.5%), pneumothorax requiring an intercostal drain for >7 days (1.4%) and respiratory failure (1.8%).

Bronchial Thermoplasty

Patients may experience post-procedure respiratory exacerbations.

Contraindications

Contraindications

Argon Plasma Coagulation (APC)

- In common with other ablation procedures performed using flexible bronchoscopy, APC should not normally be used for the treatment of lesions causing significant tracheal obstruction unless facilities are immediately available for securing the airway in the event of complications. Such lesions can more safely be treated by flexible bronchoscopy under general anaesthesia with endotracheal intubation or by rigid bronchoscopy. As with laser or electrocautery, APC is contraindicated where there is a requirement for a FiO_2 of >0.4 because of the theoretical risk of endobronchial fire, although this complication has not been described in the literature. Most modern implantable cardiac pacemakers or defibrillators are compatible with diathermy/APC, but advice should be sought from the patient's cardiologist prior to the procedure.
- Caution with pacemaker

Valves

- Carbon monoxide transfer factor <15% predicted and forced expiratory volume (FEV_1) <15% predicted
- Oxygen tension on air <6.0 kPa
- Production of purulent sputum more often than not (>50% of days)
- Lung nodule requiring surgery

Photodynamic Therapy (PDT)

- Tracheal disease requires pre-stent or debulk
- Porphyria
- Allergy to haematoporphyrin

Brachytherapy

- Prior high-dose radiation or thermal laser
- Tracheal disease may require pre-stent or debulk

Thermal Laser

If exclusive extrinsic airway compression

Diathermy/Electrocautery

Caution with pacemaker

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

Clinical Algorithm

Patient Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Du Rand IA, Barber PV, Goldring J, Lewis RA, Mandal S, Munavvar M, Rintoul RC, Shah PL, Singh S, Slade MG, Woolley A, British Thoracic Society Interventional Bronchoscopy Guideline Group. British Thoracic Society guideline for advanced diagnostic and therapeutic flexible bronchoscopy in adults. Thorax. 2011 Nov;66(Suppl 3):iii1-21. [131 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2011 Nov

Guideline Developer(s)

British Thoracic Society - Medical Specialty Society

Source(s) of Funding

British Thoracic Society

Guideline Committee

British Thoracic Society Interventional Bronchoscopy Guideline Group

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Financial Disclosures/Conflicts of Interest

See the table in Appendix 1 of the original guideline document for committee membership and declared conflicts of interest.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the British Thoracic Society Web site .

Availability of Companion Documents

The following is available:

- Appendix 4. Evidence tables. Available in Portable Document Format (PDF) from the British Thoracic Society Web site .

Audit recommendations are available in the original guideline document .

Patient Resources

The following is available:

- Patient information - having a bronchoscopy. Electronic copies: Available from the British Thoracic Society Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on August 17, 2012. The information was verified by the guideline developer on October 26, 2012.

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